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Capacity & Conflict on the Upper Chattooga River

An integrated analysis of 2006-2007 reports

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Prepared for
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Prepared by
Doug Whittaker, Ph.D. & Bo Shelby, Ph.D.
Confluence Research and Consulting

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1. Introduction

The 57-mile Chattooga River originates in the mountains of western North Carolina and forms a portion of the border between Georgia and South Carolina (Figure 1). In 1974, the river's "outstandingly remarkable" geology, biology, scenery, recreation, and history values were recognized by Congress through designation of a 15,432-acre corridor as part of the National Wild and Scenic River System. The corridor includes lands in three National Forests (the Nantahala in North Carolina, the Chattahoochee in Georgia, and the Sumter in South Carolina), and passes through about five miles of the 8,724-acre Ellicott Rock Wilderness.

The Chattooga River provides important recreation resources for local, regional, and national visitors, offering high quality fishing, whitewater boating, hiking, swimming, camping, hunting, and related opportunities. The quality of these recreation opportunities has attracted substantial use, which in turn has led to concern about visitor impacts. A recent revision of the Sumter National Forest Land and Resource Management Plan (LRMP or Forest Plan) addressed several recreation issues in the corridor (USFS, 2004a, 2004b); among the management actions, the plan retained a 1976 decision allowing whitewater boating on the lower 36 miles of the Chattooga river and prohibiting boating upstream of Highway 28 (about 21 miles; Figure 2). This boating closure above Highway 28 was later appealed, and the Forest Service agreed to reassess that decision as part of broader examination of visitor capacity issues on the Upper Chattooga. The Decision for Appeal (USFS, 2005) provides the need for this analysis.

The Forest Service is employing a modified "Limits of Acceptable Change" (LAC) planning framework (Stankey et al., 1985) – widely used by the Forest Service and other managing agencies – for evaluating visitor use and potential impacts on the environment. This framework addresses capacity decisions by (1) recognizing different types of recreation opportunities, (2) identifying indicators that represent important resource or social conditions, (3) setting standards that define when impacts are unacceptable (the "limit of acceptable change"), and (4) deciding which management actions will be used to reduce impacts that exceed standards. The framework organizes the collection and analysis of scientific information and encourages public input.

Forest Service planning efforts from Fall 2005 made progress on several steps in the LAC process (e.g., defining concerns and issues, identifying existing and potential recreation opportunities, developing lists of important biophysical and social impacts, developing ways to measure those impacts). The next step is to collect and integrate information about use, opportunities, impacts, and potential actions to address them.

For this step, the Forest Service initiated several complementary information collection methods beginning in Spring 2006, as described in a "Data Collection Implementation Plan" (USFS, 2006a). Detailed findings for specific efforts can be found in a series of separate reports or other output (see list in "sources" below). In this report, we ***highlight and integrate the key findings*** from those efforts. The goal is to provide a ***concise review of capacity issues*** for the LAC process.

The Forest Service will eventually merge the LAC effort into a National Environmental Policy Act (NEPA) environmental review process. This has prescribed steps that include issue scoping, alternative development, impact analysis, and choice of a preferred alternative. Information in the present report will help the NEPA process by identifying important issues; describing existing and potential opportunities, use, and impacts; and reviewing potential actions for addressing impact problems. The Forest Service will use the information in combination with public input to

develop a range of reasonable alternatives (including a "no action" alternative that retains the boating closure on the upper river), analyze the impacts of those alternatives, and choose a preferred alternative.

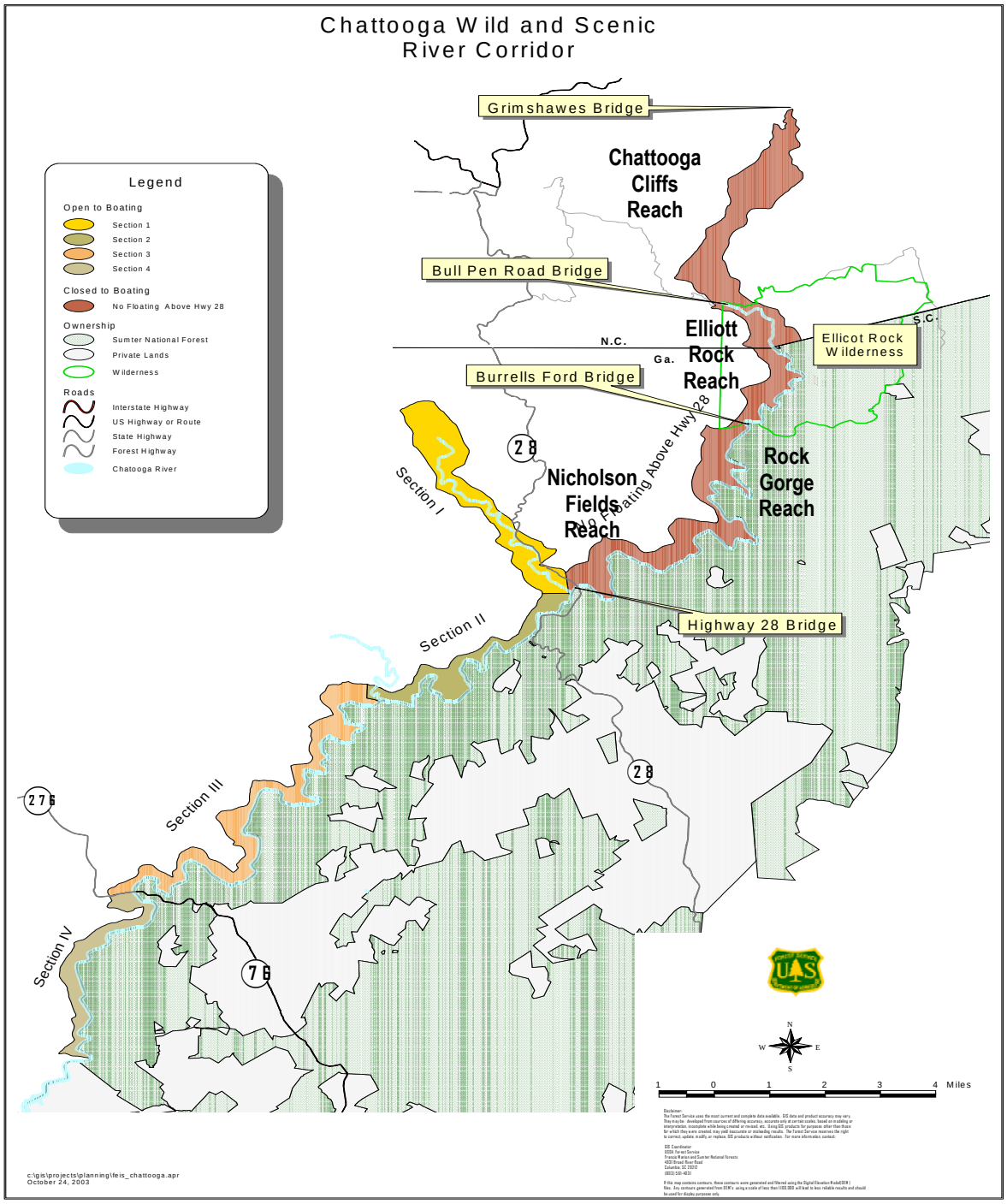

Figure 1. Map of Chattooga River Corridor, 2007.

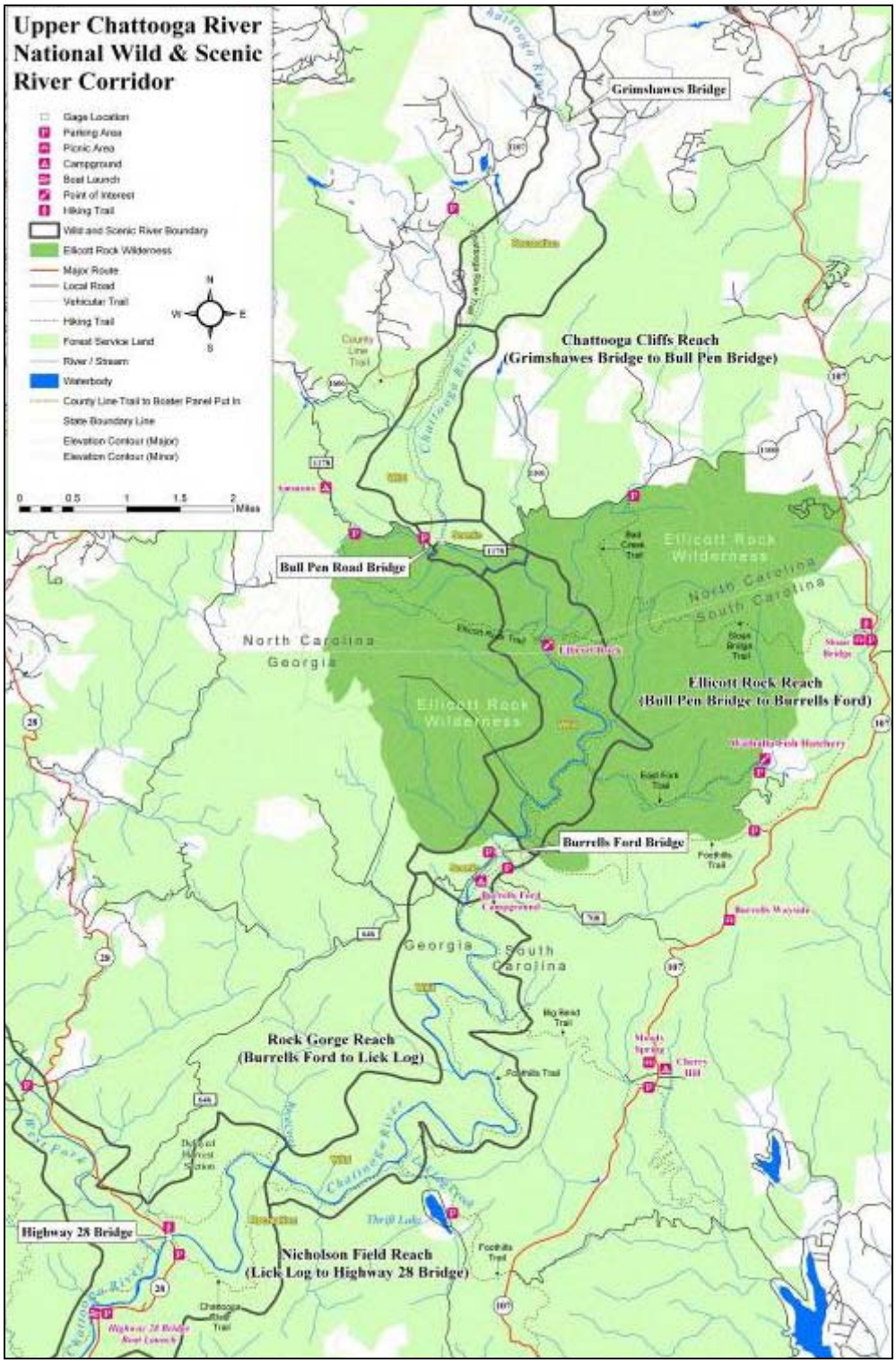

Figure 2. Map of Upper Chattooga River.

Report objectives and organization

The goal of this report is to summarize key findings from specific information collection efforts conducted by the Forest Service or its contractors (see list below), then integrate findings with information from other rivers and the Upper Chattooga River "decision environment."

The report is designed as a reference document. As with an encyclopedia, few readers are likely to read it from start to finish, but when they want information on a particular topic, it should be easy to find. To help readers focus on specific areas of interest, we have organized the document into chapters, which correspond to report objectives:

Chapter:

2. Describe the "***decision environment***" for visitor capacity issues on the Upper Chattooga. This includes legislation (e.g., the Wild and Scenic Rivers Act, Wilderness Act) or agency management guidelines, "lessons" from capacity assessments on other rivers, and findings from a historical review of Chattooga recreation management.
3. Summarize existing and potential ***recreation opportunities*** on the Upper Chattooga. This includes brief reviews of "outstandingly remarkable" values described in agency reports, input from public meetings during the current planning process, and information from field reconnaissance.
4. Summarize information about existing ***use levels*** for current opportunities and describe use levels or trends for existing and potential opportunities.
5. Review potential ***biophysical impacts*** related to existing or potential recreation uses. For each type of impact, describe (1) the range of possible impacts on the Upper Chattooga (if known), (2) potential standards to consider in the LAC / NEPA process, and (3) ways that recreation planners have addressed those impacts on other rivers.
6. Review potential ***social impacts*** related to existing or potential recreation uses. For each type of impact, describe (1) the range of possible impacts (if known), (2) potential standards that may be considered in the LAC / NEPA process, and (3) ways those impacts have been addressed on other rivers.
7. Assess ***flow requirements*** for fishing, boating or other flow-dependent recreation opportunities, and apply ***hydrology information*** to assess the frequency of days with those opportunities. This will help assess potential impacts of different types of use.
8. Review specific ***management actions*** that might be used to address specific "impact problems" or conflicts on the Upper Chattooga. For each action, the review will discuss the impacts it addresses and keys to successful implementation. The chapter also includes a review of recreation capacity and conflict concepts.
9. Provide a brief discussion on ***proceeding with planning and decision-making*** on the Upper Chattooga, including a review of additional information options.

Information sources

Information in this report is based on several sources. Primary sources included reports or other information developed during the specific data collection efforts described in the Implementation Plan (USFS, 2006a). Those efforts and associated outputs are listed below:

- Chattooga River history project: Literature review and interview summary. Summary report (Tetra Tech, 2006).
- Capacities on other Wild and Scenic Rivers: Seven case studies. Summary report (IWSRCC, 2007).
- Use estimation workshop summary. Tables, graphs, and notes (Berger and CRC, 2007).
- Limited use monitoring summary, September 2006-February 2007. Tables, graphs, and notes (Berger, 2007a) from an on-going program expected to be complete in Aug. 2007.
- "Proxy river" information. Summary tables and notes (USFS 2007a).
- Biophysical monitoring information for the Chattooga River. Summary tables, graphs, and maps (USFS, 2007c).
- Hydrology issues on the Upper Chattooga River. Summary discussion, tables, graphs, and analyses (USFS, 2007d).
- Literature review report. Summary report (Louis Berger, 2007b) with four sub-sections on (1) recreation-related impacts and standards; (2) recreation-related trail/site impacts; (3) recreation-related wildlife impacts; and (4) recreation-related flow preferences.
- Expert panel field assessment report. Summary report (Louis Berger, 2007c).

In addition to these sources, the present report incorporates additional information from:

- Fieldwork in the Upper Chattooga corridor in March 2006, July 2006, and January 2007, including hiking on several trails, camping at Burrells Ford, and accompanying boaters and anglers during "expert panel" field reconnaissance trips.
- Informal discussions with public and stakeholders during fieldwork, via phone calls or emails, and at public meetings in July 2006.
- Review of public or stakeholder comments to the Forest Service or on public message boards (e.g, Northern Georgia Trout Online, BoaterTalk) on Upper Chattooga capacity issues. This information was not used to quantify proportions of people with various advocacy positions (because representativeness of the "sample" is problematic), but it helped identify the range of stakeholder concerns and debate.
- Discussions via phone interviews or email with staff from the Forest Service or state agencies, and researchers who have studied or worked on the Chattooga.
- Literature or researcher experience with capacity and conflict studies or planning efforts on other rivers.

Report limitations and caveats

This report is not a "decision document" and does not recommend specific management actions. Instead, it is designed to provide the Forest Service, stakeholders, and the public with information about use, impacts, and trade-offs of different management choices. Additional report limitations or caveats include:

- The report highlights key findings from other data collection efforts and references the primary sources for that information; readers with greater interest can review those sources.
- Despite the large quantity of information about the Upper Chattooga, data for some topics is unavailable or less precise. For example, use data for some opportunities and locations rely primarily on agency staff "expert judgments," and such issues are acknowledged explicitly.
- The report includes a chapter on the Upper Chattooga "decision environment" for capacity decisions. The goal is to clarify misconceptions that sometimes appear in debates about legislative mandates, the appeal decision, the history of Chattooga management, or other issues. However, it is beyond the scope of this report to provide a comprehensive analysis of legislative mandates or how those have been interpreted by the Forest Service, other federal agencies, or the courts.
- The report does not attempt to summarize Forest Service, public, or stakeholder opinion. The report describes studies from the Chattooga (or other rivers) that may suggest likely public or stakeholder reaction to impacts or management actions, but the LAC / NEPA processes (or a potential user survey through additional work) are the appropriate forums for formal public and stakeholder input.
- This report does not pre-judge any decision about allowing, prohibiting, or limiting boating or any other use. The goal is to provide information so the Forest Service and the public can assess these issues. A subsequent NEPA process will develop and assess a range of alternatives for managing recreation use on the Upper Chattooga (including a "no action" alternative).
- Some stakeholder debate has focused on "which group creates more impact" as a criterion for deciding which group deserves "priority" in a given location. In contrast, this report focuses on the range of potential impacts from different uses, and the specific impacts that are likely to be limiting factors for capacity decisions.
- The present report focuses on the Upper Chattooga, as directed by the Forest Service's Decision for Appeal. However, management of the entire corridor is often relevant for context, and may help explain the original upper river boating closure, use and impact patterns, or the acceptability of actions to address problems. Lower Chattooga management actions are not formally reviewed in this report, but some are discussed in the context of Upper Chattooga management.
- This report summarizes information collected so far. As the NEPA analysis and decision-process continues, new data may inform or alter the conclusions presented here.
- Conclusions in this report are made by the authors based on a review of other reports, literature, or their research and planning experience; they are offered for consideration but do not necessarily represent Forest Service positions, conclusions, or policies.

2. The Upper Chattooga "Decision Environment"

This chapter describes the "decision environment" for visitor capacity issues on the Upper Chattooga by (1) highlighting concepts in guiding legislation (e.g., the Wild and Scenic Rivers Act, Wilderness Act) or other agency mandates; (2) examining general decision environment "lessons" from capacity assessments on other rivers; and (3) describing major findings from a review of the history of Chattooga recreation management.

Guiding legislation or other agency mandates

Wild & Scenic Rivers Act

The 1968 Wild and Scenic Rivers (WSR) Act established a national system of rivers to be protected for their free-flowing condition (no dams or other water resource developments that would harm river values), water quality, and "outstandingly remarkable" (OR) values (specific to each designated river). The WSR Act initially designated eight rivers and set procedures for future additions to the system. There are currently 165 designated rivers totaling over 11,500 miles. The Chattooga was the 12th river in the system (first in the southeast) in 1974.

A complete text of the Act is available at rivers.gov/wsract.html. Technical reports from the Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) are available at rivers.gov/publications.html and describe key concepts and managing guidelines for the system, including:

- OR values are usually identified in a pre-designation study. Agency staff use professional judgments to determine which characteristics are unique, rare or exemplary at a regional or national scale so as to qualify as "outstandingly remarkable" (IWSRCC, 1999, pp. 12-15; IWSRCC, 2006, p. 17).
- For some rivers, OR values identified at designation may not be specific enough for management purposes. In these cases, the pre-designation study, Congressional hearings/reports, and other agency documents help define specific OR values (IWSRCC, 1999, pp. 12-15; IWSRCC, 2007, draft p. 5).
- The Chattooga was authorized by Congress for study in 1968; the study report was forwarded to Congress in 1971 (USFS, 1971). A more recent formal analysis of OR values was conducted in the mid-1990s (USFS, 1996).
- Agencies must develop comprehensive river management plans (CRMPs) for WSRs that address "resource protection, development of lands and facilities, user capacities, and other management practices" to protect free-flowing condition, water quality, and OR values (Section 3(d)(1)). OR values and protection strategies are not uniform, and will vary from river to river. (IWSRCC, 2006, p. 33, 44, 63)
- Section 10(a) of the WSR Act directs management to protect and enhance free-flowing conditions, water quality, and OR values, but allows other uses as long as they do not "substantially interfere with public use and enjoyment of the river's values." Only after the river's free flow condition, water quality, and OR values are protected and enhanced can other uses (e.g., grazing, new recreation development) even be considered under the "substantially interferes" clause (IWSRCC, 2007 – draft p. 3). Congress left the judgment of when a use "substantially interferes" to the discretion of the river managing agency.

- When recreation is an OR value (as on the Chattooga), the IWSRCC recommends protecting regionally or nationally significant recreational attributes while avoiding adverse effects on non-recreation OR values (IWSRCC, 2007, draft p. 5). This recognizes the need to balance recreation with other values through the Comprehensive River Management Plan (CRMP). When two or more types of recreation are defined as part of a broader OR recreation value, the IWSRCC recommends balancing the attributes that made each type regionally or nationally significant (IWSRCC, 2007, draft p. 5). Similar to balancing between OR values, the river-administering agency is required to "address…user capacities" consistent with protecting the desired experience and other non-recreation values.
- WSR managing guidelines require "carrying capacity" analyses "to determine the quantity and mixture of recreation and other public uses which can be permitted" without adversely impacting OR values (USDA and USDOI, 1982). However, WSR designation does not require restrictions on the type or amount of recreation use. When needed, "use restrictions or limitations to protect important resource or social values are developed through planning processes that include extensive local, regional, and national public involvement." (IWSRCC, 2006, p. 37).
- A recent legal case from the Merced River in Yosemite National Park has raised questions about the "capacity" requirement in the WSR Act. Some claim that capacities must specify a limit on the number of visitors in a given area (Haas, 2004). In contrast, NPS (with IWSRCC support, 2007) suggests capacities can be defined through broader visitor management programs (e.g., LAC or similar frameworks) that identify desired recreation and resource conditions through indicators/standards and linked management actions (which may not specify use limits). The case is still being adjudicated (Rylands, 2007).
- When designated, segments of a river are "classified" as "wild," "scenic," or "recreational" depending upon their level of accessibility, land and water resource development, and water quality. "Wild" segments are generally inaccessible except by trail or boat, and "represent vestiges of primitive America." "Scenic" segments may have roads to the river but usually not along it. "Recreational" segments may have roads along them. "Recreational" classification does not establish recreation as an "outstandingly remarkable" value or give it management priority over other uses or protection efforts. Future development levels must be compatible with classification and may limit some management options (e.g., developing a visitor center in a wild segment) to address impact problems. (IWSRCC, 2006, p. 20-21, 38)
- WSR designation does not necessarily restrict any particular type of use in a corridor, including motorized boats, jet skis, hovercraft, or wheeled vehicles. However, such uses must be consistent with the desired conditions and experiences to be offered in a corridor, which link to OR values. In general, types of use and access routes within river corridors at the time of designation receive "grandfather rights" (continued use). However, if an access route or type of use adversely impacts an OR value, it may be closed or regulated. These issues are addressed through management planning that considers "factors such as impacts (positive or negative) on river values, user demand for such motorized recreation, health and safety to users, and acceptability with desired experiences and other values for which the river was designated." (IWSRCC, 2002, pp. 4-6; IWSRCC, 2006 p. 49-50).

Wilderness Act

The Wilderness Act applies to a roughly five mile segment of the Upper Chattooga (Ellicott Rock Wilderness), adding some considerations for this "decision environment:"

- Wildernesses are designed to protect public purposes of "recreational, scenic, scientific, educational, conservation, and historical use," but designation does not identify individual or more specific values (or priorities) for any given wilderness (a major difference from WSRs, where specific values are defined for each river). The overarching concept is to preserve natural conditions and wilderness character.
- The Wilderness Act specifically prohibits some uses and development. With some exceptions, prohibitions include motorized and mechanized vehicles, timber harvest, new grazing and mining activity, or development. These restrictions do not apply to trails and bridges used to access these areas for "wilderness purposes."
- The Wilderness Act specifically identifies "outstanding opportunities for solitude" and "primitive and unconfined type of recreation" as management goals. However, it does not further define these terms.
- The Act also directs wilderness to be managed for "unconfined recreation." One interpretation suggests indirect management actions should be used to limit recreation impacts unless those prove insufficient, in which case direct actions are acceptable (USFS, 1990; section 2323.12).
- Most types of recreational use are allowed in Wilderness, "except those needing mechanical transport or motorized equipment, such as motorboats, cars, trucks, off-road vehicles, bicycles and snowmobiles." Commercial services may be offered for activities "proper for realizing the recreational or other wilderness purposes" (Section 4(d)(5)).

Other legislative guidance

Organic legislation that provides general ***guidance for forest management*** (e.g., 1960 Multiple Use Sustained Yield Act or MUSY; 1976 National Forest Management Act or NFMA) do not overrule more specific direction in the WSR or Wilderness Act. However, these laws provide several complementary management principles, including:

- The "multiple use" concept in MUSY suggests that forests in general cannot be managed for a single purpose, but priorities can be established for sub-areas within a forest.
- The "sustained yield" concept in MUSY requires "achievement and maintenance of a high-level regular output of the renewable resources." Applied to recreation, this generally suggests a non-degradation standard regarding high quality recreation opportunities.
- MUSY by itself does not assign "weights" to specific values or uses, and the mix of uses for any particular area is "left to the sound discretion and expertise of the Forest Service" (Sierra Club v. Hardin, 1971). However, MUSY and NEPA direct agencies to document rationales for decisions so they are not "arbitrary or capricious."
- NFMA recognizes the complexity of managing renewable resources. The law requires periodic monitoring, re-assessment, and planning to determine the best mix of "goods and services" to be produced from the nation's forests, which are understood to change over time.

Congress also has established ***national goals for recreational fishery resources*** (e.g., the 1995 Federal Recreational Fisheries Executive Order 12962) that some state agencies have noted in regard to Chattooga management. This law urges federal agencies, in cooperation with states and tribes, to improve the quantity and productivity of aquatic resources for increased recreational fishing opportunities. While generally addressing potential conflicts between protecting fisheries and providing recreational fishing, this order provides no specific guidance on the management of

recreational fishing (e.g., capacity definitions, addressing conflicts with other recreation uses or between different types of fishing use, etc.).

Other management factors

Conflicts between WSR and Wilderness provisions. If the WSR and Wilderness Act conflict, language in the WSR Act clarifies that the "more restrictive" provisions shall apply (IWSRCC, 2006 p. 51). In general, differences between WSRs and designated Wildernesses include:

- Motors may be allowed on WSRs, but they are generally prohibited in Wilderness.
- Although dams could be authorized in Wilderness, they are incompatible on a WSR.
- Depending on the classification, new rights-of-way, roads, trails, bridges, and recreational facilities (e.g., campgrounds and picnic areas) may be allowed inside WSR corridors, but they are generally prohibited in wilderness.

Integrating state fisheries management goals and authorities. Section 4(d)(8) of the Wilderness Act notes that State jurisdiction has precedence with respect to managing wildlife and fish in the national forests. Except in the case of endangered species and marine mammals, states generally manage fishing and hunting though their own laws and regulations, which are not affected by WSR and Wilderness designations. In general, hunting and fishing are allowed on WSRs, except where agencies might establish no hunting zones for safety or for other reasons in consultation with state fish and wildlife agencies (IWSRCC, 2006, p. 48). In the case of the Chattooga River, recreational trout fisheries have been enhanced through stocking and regulations since the 1930s, and these appear likely to continue through the next forest planning cycle. For this decision environment, the existing stocking and regulation program is assumed (see discussions about stocking and fishing regulations in Chapters 3 and 4), and the report does not evaluate ecological impacts or benefits of stocking programs.

Navigability and private land issues.

WSR status does not change the status of land ownership within or adjacent to the designated WSR corridor. Some believe that public access depends solely upon whether the waterway is legally navigable or state law provides for boat passage. Others believe that WSR status may allow a federal agency to manage the surface of the water (which may include allowing boating or other recreation use) regardless of its navigability or boat passage status. As far as we know, this specific issue has not been adjudicated.

This issue is relevant because segments of the Upper Chattooga WSR in North Carolina are bordered on both sides, and possibly included in, privately-owned property (and has, in some places, been posted "No Trespassing"). However, these segments have not had their navigability or boat passage status legally determined by any court or governmental agency. Local U.S. Corps of Engineers (COE) personnel have communicated informally that they do not consider the Upper Chattooga River navigable. However, the US COE Division Engineer has not published a final determination of navigability for this stretch of the river under **33 CFR Part 329.14 - Determination of Navigability.** Similarly, we are not aware of any formal NC Attorney General opinion or State Court ruling as to whether or not the Upper Chattooga River in North Carolina is considered to be "navigable in fact" and therefore subject to public trust rights under state law. If it were declared legally navigable pursuant to the Public Trust Doctrine, the state holds in trust for the public the right to use the waterway for a variety of recreational purposes, subject to lawful regulation by the federal and/or state and local government. (IWSRCC, 2006 p. 41; 58).

A broad "advisory" opinion (not specific to the Chattooga) by the North Carolina attorney general's office suggested that waters "capable of use" by canoes and kayaks were likely to be determined navigable if adjudicated (Oakley & Jernigan, 1998). However, they also noted that several pending state court cases (at the time) might affect that opinion and its application for boaters. One segment flowing through private property has a 20 to 25 foot waterfall (Corkscrew Falls), and the feasibility of boating the falls (or portaging/scouting without trespassing) may be an important question. It was beyond the scope of this analysis to provide information for such a determination, and access to the reach was not provided by landowners during fieldwork in any case.

Forest Service response to AW appeal

American Whitewater (AW; a boater advocacy group) appealed the "no boating" decision in the Sumter National Forest Plan on several grounds (AW, 2004). The response to that appeal (USFS 2005) by the Chief of the Forest Service reviewed WSR and Wilderness legislation and agency guidelines, and added other language specific to the Chattooga "decision environment." The appeal response addressed many issues and readers are encouraged to review it in its entirety, but important excerpts are provided below:

As Recreation is identified as one of the Chattooga River's OR [outstandingly remarkable] values in the pre-designation study (Wild and Scenic River Study Report: Chattooga River, p. 66) and the FEIS (FEIS, p. 3-301, Appendix H, p. H-4), whitewater boating (canoeing and rafting) is specifically recognized as one of the recreational opportunities available in this generally remote river setting (Chattooga WSR Classification, Boundaries, and Development Plan (41 FR 11830, March 22, 1976)).

Specific to recreation as an OR value, the Interagency Guidelines direct public use "to be regulated and distributed where necessary to protect and enhance…the resource values of the river area." Agency policy (FSM 2354.41) identifies factors to consider in developing direction for recreation visitor use in a wild and scenic river (WSR) corridor including the capability of the physical environment, desires of present and potential users, diversity of recreation opportunities within the geographic area, and budgetary, personnel and technical considerations. If it becomes necessary to limit use ,"ensure that all potential users have a fair and equitable chance to obtain access to the river."

The Forest Service manual further requires that limitation and distribution of visitor use should be based on "periodic estimates of capacity in the forest plan" (FSM 2323.14). The Regional Forester, based on the authorities listed above, can limit or restrict use within a WSR or Wilderness area. To protect the Chattooga River's OR values and Ellicott Rock Wilderness resources, the Regional Forester may:

- *Disallow or restrict the number of (private/commercial) on-river and in-corridor recreation users,*
- *Determine the type of recreation use, or*
- *Dictate the timing of such use.*

This authority should be exercised only with adequate evidence of the need for such restrictions. The Sumter National Forest RLRMP record, however, is deficient in substantiating the need to continue the ban on boating to protect recreation as an ORV or to protect the wilderness resource. No capacity analysis is provided to support restrictions or a ban on recreation use or any type of recreation user. While there are multiple references in the record to resource impacts and

decreasing solitude, these concerns apply to all users and do not provide the basis for excluding boaters without any limits on other users.

In addition, there is no basis in law, regulation or policy to exclude a type of wilderness-conforming recreation use [boating] due to concerns relative to safety, and search and rescue.

Lessons from other rivers

Managers of several other Wild and Scenic rivers have addressed capacity and conflict issues; examining those cases may be relevant for the Upper Chattooga. Oustandingly remarkable values and protection strategies vary from one river to another, so decisions on other rivers do not necessarily set precedents for the Chattooga (or any other river). The seven case studies were developed to examine the ***range*** of ways that agencies with WSRs have interpreted laws and mandates, assessed river values and impacts, and chosen management actions to protect those values (IWSRCC, 2007). The list was developed with Chattooga issues in mind, but its larger purpose is to inform managers from all agencies with WSRs. Specific examples of rivers with management issues, approaches, and actions similar to the Chattooga are discussed in later chapters of this report.

The seven case studies discussed here also do not imply knowledge of the frequency with which particular management actions have been used on WSRs. For example, including a river with use limits does not imply that ***most*** rivers have use limits (in fact, most do not). The case studies also did not evaluate the "success" of management actions for particular rivers. With these case studies, the report does not advocate particular actions as "good management," but it identifies actions that have been accepted in plans (and sometimes survived legal challenges).

Case study rivers

Case study rivers were chosen to represent diversity by geography, use levels, types of impact issues, and types of management actions. Rivers are listed below, with brief summaries of recreation management issues and capacity-related actions. Readers with more interest in these case studies should consult the original report (IWSRCC, 2007).

- ***Kern River, California.*** 151 miles on two forks, with use levels ranging from low to high on different segments. Major issues include managing for the appropriate mix of trail vs. boating use, private vs. commercial boating use, and camping vs. day use. Actions include group size limits, a full (private and commercial) boater use limit system on one segment, commercial boating limits on others, and overnight use limits in one Wilderness area.
- ***Metolius River, Oregon.*** 29 miles with moderate fishing and boating use. Major issues include appropriate mix of fishing, boating, and hiking/camping use in corridor, site impacts at day use and fishing locations, and maintaining ecological integrity with moderate recreation use. Actions include group size limits, designated dispersed camping sites, no motorized boating, "resting" sites in developed campgrounds, and boating registration (but no limits).
- ***North Umpqua, Oregon.*** 34 miles on renown steelhead stream, which also has moderate whitewater boating and campground use along a scenic highway. Major issues include boating-fishing interaction and conflict, and site impacts on ecological and cultural resources. Actions include site reorganization, limiting commercial boating, and recommended (advisory only) no boating hours and 5-mile "no boating" segment during steelhead season.

- ***Pecos River, New Mexico***. 21 miles, with about 13 classified wild. Major issues include dispersed camping impacts and site/social impacts at concentrated day use locations. Actions include designating dispersed camping sites, a ban on off-road vehicles, and reorganization of day use sites. Boating use is rare due to limited flows; this example was included as an example for its non-boating use issues.
- ***Snake River in Hells Canyon, Idaho/Oregon.*** 68 miles below Hells Canyon Dam. Major issues include the mix of motorized and non-motorized use, and social/biophysical impacts from boating use in general. Actions include camp length of stay limits, limits on private/commercial and motorized/non-motorized boating, and human waste and fire pan regulations. The Forest Service's use limit "balance" was challenged in court by both motor and non-motor advocates, but was upheld.
- ***Upper Rogue, Oregon.*** 40 miles, with most along a scenic highway. Recreation is not an OR value, but recreation opportunities are explicitly managed. Major issues include site impacts at road-accessible day use and campground locations, and interpretation development at geological features. Management actions included site planning and re-organization (with road and trail closings), and a boating closure on the headwaters segment (primarily due to features such as lava tubes and a steep log-filled gorge).
- ***Wilson Creek, North Carolina.*** 23 miles, most classified recreational and along a heavily visited highway. Major issues include site impacts from a variety of day use (hikers, picnickers, whitewater boaters when flows allow), crowding, and parking congestion. Actions include limiting commercial uses (angling, whitewater boating), reorganizing parking areas and establishing capacities, closing trails to off-road vehicles or bicycles, and creation of designated dispersed camping sites.

"Decision environment" findings from case studies

Taken together, the seven case study rivers suggest several general findings about how other WSRs have addressed capacity or other visitor impact issues:

- ***Management issues and actions have generally been linked to OR values.*** The WSR Act requires this link, although management plans have not always explicitly tied standards and actions to those values. For example, the recreation OR values for the Forks of the Kern River identify solitude as a management goal, and both group size limits and permit systems (for boating and overnight use) address this goal, but without quantitative standards for particular impacts or conditions such as encounters. In contrast, the Snake through Hells Canyon has limits on the number of float and motorized trips during the prime summer/fall season to protect OR values associated with overall recreation quality, for which it has identified and monitored specific encounter standards.
- ***Multiple actions are commonly used to address a diversity of impacts.*** Few river capacity issues have been addressed with a single management action; most rivers employ several. Management tools to address the impacts of recreation use may include: 1) facility infrastructure or site/trail improvements to concentrate use to more durable areas or accommodate the volume of use; 2) education efforts to encourage appropriate recreation behaviors that minimize impacts; 3) regulations that affect the type of use or user behaviors that cause impacts; or, 4) use limits or restrictions that specify how much use it too much (or what types of uses are acceptable through zoning in space or time).
- ***It is useful to distinguish between direct and indirect management actions.*** On the Snake through Hells Canyon, use limits and non-motorized use periods (certain days of the week)

are used to directly address encounter and conflict issues. On the Pecos, Metolius, Upper Rogue, and Wilson Creek, crowding and encounters are addressed indirectly by managing the size and function of parking areas and by designating dispersed campsites. The North Umpqua's voluntary boating closures (by season, segment, and time of day) to separate anglers and boaters during steelhead season "walks the line" between direct and indirect, with "recommendations" rather than formal regulations. Decisions about direct or indirect actions appear to depend on impact severity, likely effectiveness of indirect actions, and acceptability among stakeholders and the public.

- ***Searching for "balance" among potentially conflicting/competing groups.*** Several rivers have identifiable user groups that may compete for camps, space on the river, or otherwise have impacts on the quality of one another's trips. The Snake through Hells Canyon is perhaps the best illustration, with use limits and motorized use restrictions in the wild segment designed to provide different types of recreation opportunities. The allocation of days and segments among these groups went through several formal appeal processes, an adjudication in district court, and a circuit court appeal (with advocacy groups on both sides opposing the Forest Service balance). Ultimately, the courts upheld the agency's position after the agency conducted an analysis of impacts. Other rivers with recreation user group "balancing" include the Metolius (campers, anglers, and boaters), North Umpqua (anglers and boaters), and Kern (commercial and non-commercial boaters).

History of Chattooga River recreation management

Documentation of the basis for the 1976 boating closure and historic management of other recreation use on the Upper Chattooga is limited. Such documentation (NEPA, etc.) was often less systematic in the 1970s, and its absence makes it hard to "settle" stakeholder debate about several capacity/conflict-related issues such as the extent of boater-angler conflicts or the initial rationale behind the boating closure.

The Forest Service contracted consultants to review documents and interview former agency staff to help provide additional information about these issues (Tetra Tech, 2006). This documentation of previous decisions is not intended to suggest their validity under current conditions. However, it may help frame issues in the current analysis, or correct misunderstandings in stakeholder debate.

Readers interested in the details of this effort are encouraged to read the report (TetraTech, 2006), which includes a list of studies, other management documentation, and a timeline for major Chattooga events and management decisions. Key findings from the history review (or other sources, as cited) are summarized below:

- In the late 1960s, recreation use on the Chattooga was generally light and largely "local," with most use associated with fishing and camping at several road-accessible locations.
- The Chattooga was identified as a study river in the 1968 Wild and Scenic Rivers Act. The study began in 1969, included public meetings in 1969 and 1970, and was completed in 1971 (before substantial boating use had occurred).
- The study report recommended closing several roads along or to the river's edge, generally to create a more "primitive" river corridor. The Forest Service began to close roads after WSR designation in 1974. This adversely affected some types of "local" recreation use, particularly recreation dependent on vehicle-based access. Some forest arson incidents (especially in 1975) and repeated vandalism to Forest Service gates were attributed to

dissatisfaction over the new policies and Wild & Scenic designation (Culp, 2007). These incidents apparently did not continue past the end of the decade.

- Use on the river began to increase dramatically after the study was completed, but it was also catalyzed by the 1972 movie *Deliverance* (which was partially filmed on the Chattooga). The highest use increases came from boaters (initially private boaters, but eventually commercial rafting use grew larger). Boating use levels increased from an estimated 800 floaters per year in 1971 to over 20,000 by 1975 (Craig & Lindenboom, 1979). In recent years, the number of boaters on the Lower Chattooga is about 50,000 per year, a decrease from peaks about 80,000 in the mid-1990s (Vagias, 2006).
- Most of the boating use increases occurred on Sections II, III, and IV, which had more reliable boatable flows and less challenging rapids than reaches upstream of Highway 28. Some higher skilled kayakers and canoeists apparently ran Upper Chattooga reaches on the occasional days when flows were favorable, but this use was very low. Some less skilled (and possibly uninformed) boaters had occasionally started trips from Burrells Ford, and some apparently walked-out after arriving at challenging rapids near Big Bend Falls (similar incidents have occurred in recent years as well; Hedden, 2007). A few boaters and tubers also apparently took trips on the Class I-II Nicholson Fields segment, which had better access before the road closures were completed, and could be boated at lower (more frequent) flows. (Culp, 2007)
- Some local users, particularly anglers, appear to have had conflicts with, or became displaced by, increased boating use on the lower river. Evidence for this is anecdotal (i.e., no studies or agency reports explicitly documented specific conflict incidents or angler use shifts), but some Forest Service personnel recalled or reported knowledge of conflict incidents (TetraTech, 2006; Culp, 2007; Howard, 2007). A 1980 manual for rafting guides also cautioned about the potential for "harassment" from local anglers (Wildwater, 1980). When specific enough, these recollections suggest anglers were upset with boaters rather than the converse (Culp, 2007; Howard, 2007).
- Recollected conflicts apparently occurred on the lower river, particularly at access points on Section II and III. These segments had higher private boating use and easier rapids that required less experience/skill; Section II also traditionally had higher fishing use than downstream reaches (USFS, 1971). Although there may have been incidents on the Nicholson Fields segment just upstream of Highway 28 (Culp, 2007), boating use above Highway 28 was low, so conflicts probably were too.
- Increased boating in the early 1970s coincided with increased in-river fatalities and other safety-related incidents, averaging 3 per year between 1970 and 1975 (Forest Service, 2007). All fatalities occurred on the lower river, and about one-third involved non-boaters; they also diminished substantially by the 1980s (averaging 0.7 per year since 1975). However, Forest Service staff knew that some segments upstream from Highway 28 (Chattooga Cliffs, between Bull Pen Bridge and Ellicott Rock, and from Big Bend Falls through the Rock Gorge) were more difficult than the lower river, and generally discouraged inexperienced boaters from using them (Culp, 2007).
- Trout fishing on the Chattooga has historically been better upstream of Highway 28 (USFS, 1971, p. 20-21). Wading-based angling is easier higher in the basin (with its generally lower flows), and due to geography and elevation, water temperatures in summer are more favorable for fish.
- Trout stocking was generally heavier on the upper compared to the lower river, although stocking occurred from the headwaters down to Highway 76 into the early 1970s. The

stocking pattern was altered as road closures limited where stocking trucks could access the river, but the Forest Service also requested the elimination of stocking below Long Bottom Ford, consistent with the WSR study recommendations (USFS, 1971). This request may also have been part of a general effort to reduce boater-angler conflicts (Culp, 2007). Irrespective of the basis, stocking below Long Bottom Ford was eliminated by the mid-1970s.

- Upper Chattooga stocking was also eliminated in the Wilderness area after it was designated in 1975, and stocking was reduced due to road closures on other upper river segments. The advent and then increase in helicopter stocking by the late 1970s eventually supplemented road-based stocking on the upper river and continues today (Durniak, 2007). Chapter 3 provides additional information about current stocking patterns.
- Forest Service staff report considering a spectrum of recreation settings and opportunities when developing the 1976 river management plan that included the boating closure (Culp, 2007). By this time, staff were apparently discouraging inexperienced boaters from using the more challenging upper river as part of a broad safety initiative, they believed the number of boaters capable of safely running the upper segments was small, and boatable flows were relatively infrequent in any case. Road closures made stocking the lower river difficult, and warmer water temperatures were marginal for developing a wild fishery there, while the upper river was better suited for stocking and fishing. New trails were being planned to open additional land-based access to the upper river, and managers were concerned that increasing boater use and conflicts might "migrate" upstream with them. Taken together, this led them to an overarching management concept that encouraged boating (among other uses) on the lower river and encouraged angling and hiking (among other uses) on the upper river (Culp, 2007).
- The 1976 plan did not clearly explain this overarching management concept, although it did mention three rationales for the boating closure: boating safety, lack of reliable boating flows, and the "detrimental effect" of increasing boating use "on the fishing experience." However, it also failed to provide data or analysis to support those assertions, and did not indicate the relative importance of any rationale. A subsequent report appears to indicate that the primary reason was to allow people to "fish and hike without encountering boating traffic" (Craig & Lindenboom, 1979). Reducing the impact of boats on anglers was further discussed in the 1985 forest plan revision, which noted that the boating closure helped provide "high quality trout fishing experiences" (USFS, 1985).

"Decision environment" conclusions

As summarized in previous sections, information about guiding legislation, case studies of other rivers, and the history of Chattooga management suggest several "lessons" for future planning:

- ***Link management objectives and actions to OR and Wilderness values.*** Guiding legislation indicates that OR and Wilderness values should direct visitor impact management decisions, although case studies show varying degrees of specificity. The Chattooga has pre-designation and post-management plan documentation of the river's values, but subsequent management decisions were not always explicitly linked to them. To avoid future confusion and challenges concerning visitor management, the current planning effort should provide more clear linkages than in the past.
- ***Agency discretion is a component of the decision-making process.*** The Wilderness Act provides direction about some recreation management issues (e.g., no motors or development allowed), but otherwise leaves interpretation of its general guidelines to agencies. The WSR Act provides explicit direction that river values (free-flow, water quality, and OR values)